Finnish Institute of Occupational Health

Ache and Melancholy

– Co-occurence of musculoskeletal pain and depressive symptoms in Finland

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Summary

We analysed the co-occurence of musculoskeletal pain and depressive symptoms first in the entire Finnish population 30 years of age or older and then more closely among working people 30–64 years of age. In this study, musculoskeletal pain refers to pain, ache or motion-related soreness that occurred during the past month in the back, neck, shoulder, elbow, wrist, fingers, hip, knee, ankle or foot. Depressive symptoms cover mild, moderate and severe symptoms.

Altogether 23% of the entire population and 15% of the working population reported both musculoskeletal pain and depressive symptoms. Among all adults suffering from pain, one in three also had depressive symptoms. The simultaneous occurrence of pain and depressive symptoms increased steeply with age and the number of painful areas. The lowest co-occurence of musculoskeletal pain and depressive symptoms was detected among people with full-time work and the highest co-occurence among pensioners and unemployed people.

Among the working population, musculoskeletal pain was clearly more frequent among people who also had depressive mood. The prevalence of pain rose in step with the level of depressive mood. No clear changes were detected in the co-occurence of musculoskeletal pain and depressive mood between the years 1997 and 2009.

People who suffered from musculoskeletal pain and depressive symptoms felt that their work ability was lower than average; they consulted a doctor more frequently and retired on disability pension more often than other people. Although women reported pain and depressive symptoms more often than men, the simultaneous occurrence of these two disorders led to disability more often among men.

Contents

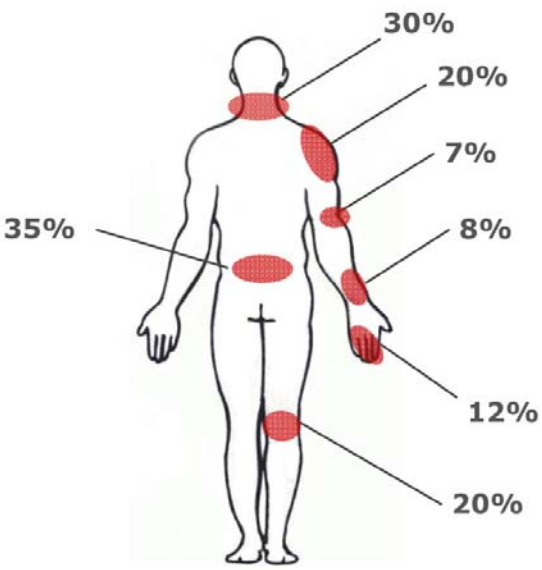
Introduction

Musculoskeletal complaints and mental disorders are the two most significant public health problems among working-age Finns. In 2009, they were the underlying reason for half of the long sick leaves for which the Social Insurance Institution (Kela) paid sickness allowance, and for two thirds of new disability pensions (Kela, Statistical Yearbook 2009). Mental disorders alone cause over 4 million days of absence from work per year in Finland. Musculoskeletal pain, in turn, is one of the most common reasons for seeking treatment. Nearly half of all visits to municipal health centres, or about 4 million visits per year, are caused by pain (Mäntyselkä 1998).

The most common musculoskeletal complaint is back pain, which is experienced by nearly everyone at least once in a lifetime and which has affected one in three Finns within the last month (Miranda 2006; Kaila-Kangas 2007). Recent neck pain has been experienced by 30% and shoulder or knee pain by 20% of Finns (Kaila-Kangas 2007) (Figure 1).

A specific musculoskeletal disease is relatively rarely the reason underlying musculoskeletal complaints. A tissue-related reason for pain is found for less than 10% of all people with back pain; for nine out of ten, the complaint is non-specific pain. Among shoulder problems, too, a non-specific pain symptom is many times more common than symptoms caused by a clinical disease (Miranda 2005).

Musculoskeletal pain or clinical musculoskeletal disorders have not increased during the last few decades in Finland (Helakorpi et al. 2010), but disability associated with musculoskeletal problems has increased steadily since the 1990s, with the exception of the last few years (2008–) (Kela, Statistical Yearbook from 1965 onwards).



Finnish population studies indicate that the frequency of the most common mental disorder, depression, has not changed either, but as in the case of musculoskeletal complaints, disability caused by depression increased sharply up to the mid-2000s (Kela, Statistical Yearbook from 1965 onwards). The number of disability pensions commenced because of depression in 2006 was 1.5 times higher than in the mid-1990s. (Gould et al. 2007). One in every five working Finns suffers from depression, and depression as a disorder (depressive episode) can be diagnosed among about 6% of Finns (Aromaa & Koskinen 2002; Ahola et al. 2006).

Figure 1. Occurrence of musculoskeletal pain.

Musculoskeletal pain and depression often occur simultaneously. Studies of clinical patient material have revealed that two out of three patients who have sought treatment because of depression also suffer from pain. Clinical depression can be diagnosed among more than half of pain patients. For chronic pain patients referred to a pain clinic, this figure can be as high as 80% (Bair et al. 2003; Linton & Bergbom 2011).

Recent epidemiological and experimental research evidence corroborates the co-occurence of pain and depression observed in patient materials. Among the population studies conducted to date, the largest is the report by the WHO that encompasses 17 countries and is based on interviews of 85,000 adults selected by random sampling. The report indicates that people who have long-term neck or back pain are twice more likely to have simultaneous depression than those who have no pain (Demyttenaere et al. 2006). The risk of depression is still higher, nearly four times, in the case of multiple pains (Gureje et al. 2008). Finland was not included in this study.

Another extensive population study, with 37,000 Canadian interviewees, also showed that depression was 2–6 times more common among people who had arthrosis, back pain or fibromyalgia (Figure 2) (Patten et al. 2006).

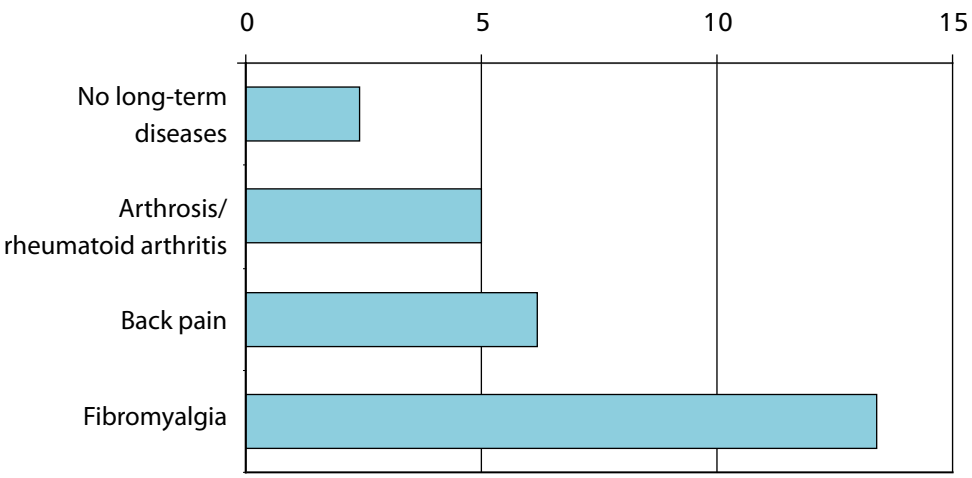


Figure 2. Prevalence of depression (%) in a Canadian study (Patten et al. 2006).

The temporal link between pain and depression varies. For some people, prolonged pain may lead to depression. Correspondingly, depression experienced at the same time as pain may prolong the pain process. Many follow-up studies have also shown that preceding depression predicts the occurrence of pain. Moreover, pain and depression may coexist without a cause-and-effect relationship, or they may share a common reason or a factor reinforcing both (Linton & Bergbom 2011). However, these factors are still largely unknown. Yet, it is known that cognitive factors, such as a catastrophizing tendency, beliefs and attitudes, and the ability to control negative emotions, play a fairly important role in pain experiences.

The coexistence of pain and depression seems to be particularly common when the pain is non-specific, i.e. the pain symptoms cannot be explained by any visible pathophysiological tissue damage (Patten et al. 2006; Aguera et al. 2010). The explanation suggested for this is that non-specific pain symptoms heighten anxiety as well as the feelings that one is unable to control one's pain and that the doctor doesn't take the existence of the pain seriously. One model describing the links between pain and depression, with transmitting and reinforcing factors, is presented in Figure 3 (Vlaeyen 1995; Valjakka 2010).

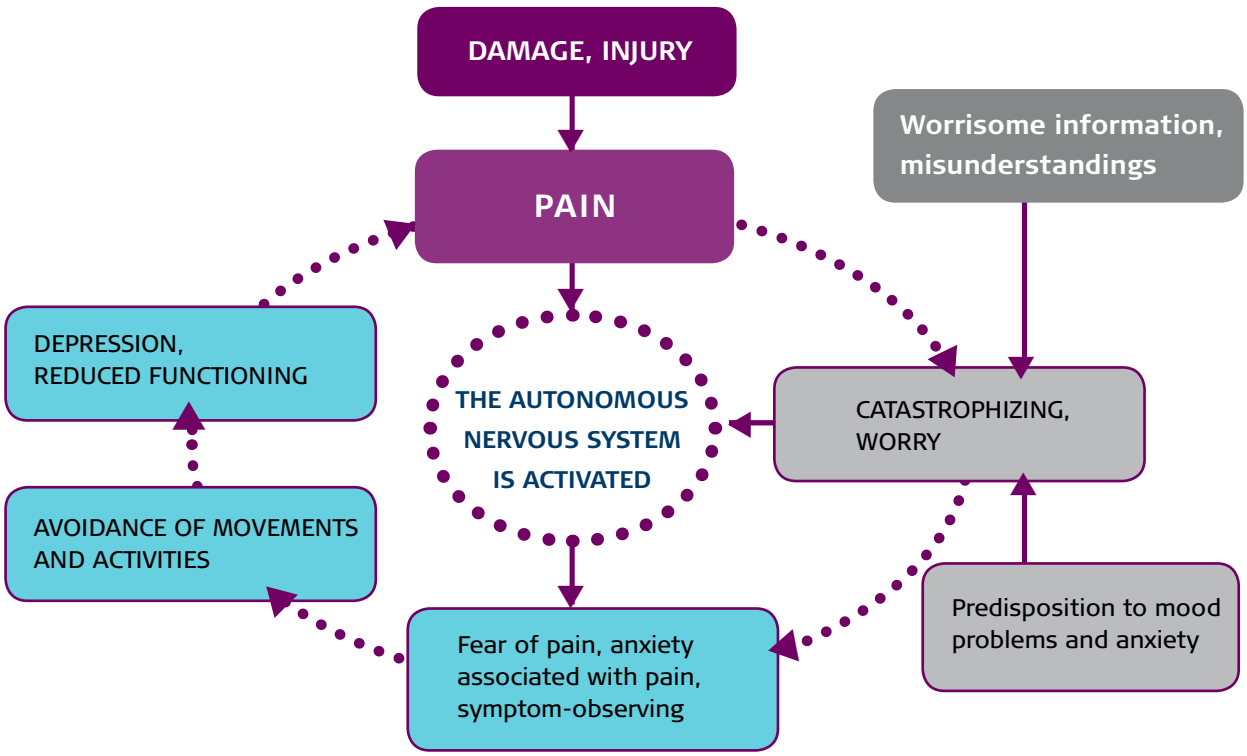


Figure 3. Model describing the 'vicious circle' between pain and depression.

New brain imaging techniques and other experimental investigations have shown that pain and depression have common biological mechanisms associated with the brain's structure and functioning and with neurotransmitters such as serotonin and noradrenalin. It has been found that the brains of depressed people have functional disturbances in the regulatory system of pain and emotions associated with pain. These disturbances may increase the intensity of the pain experienced and the unpleasant emotions caused by pain (Berna et al. 2010).

In order to promote work ability, well-being at work and work careers, it is of primary importance to identify the coexistence of musculoskeletal pain and depression. When occurring simultaneously, they seem to reinforce each other's negative effects on the quality of life and on functioning and ability to work. Depressed pain patients have sick leaves that are on average twice as long as people suffering from pain alone (Linton & Bergbom 2011). A Dutch study indicated that simultaneous long-term back pain and depression increased the number of sick days by 40 per year, when compared against the sick days caused by back pain alone (Buist-Bouwman et al. 2005).

In Finland there is fairly reliable information on the prevalence and risk factors of musculoskeletal symptoms and diseases at population level. The epidemiology of mental disorders, especially depression, has also been described quite well. However, rather little is known about how often pain and depression occur simultaneously, whether the co-prevalence differs, for instance, according to age or gender, or how pain and depression together affect Finns' ability to work.

The goal of this report is to provide general information about the simultaneous occurrence of musculoskeletal pain and depression among Finns. This co-occurence is first examined among all people 30 years of age or older, then stratified by gender, age and principal activity (working, unemployed, student etc.). Then we focus particularly on the working population. This report describes the trend in the prevalence of pain and depression during a period of 13 years (1997–2009) and how pain and depression together and separately affect the experienced work ability, consultations with doctors, sick leaves and premature retirement.

The results presented in the report are based on data of over 17,000 Finns, selected from two representative population materials: the Health 2000 study and its appended register data (e.g. the registers of the Social Insurance Institution and the Finnish Centre for Pensions), and the Work and Health interview studies conducted by the Institute of Occupational Health once every three years (Perkiö-Mäkelä et al. 2009).

Measurement of musculoskeletal pain in this report

During the interview conducted for the Health 2000 study (Appendix 1), the subjects were asked whether they had experienced pain, ache or motion-related soreness within the last 30 days in the following body areas: the back, neck, shoulder, upper arm, elbow, wrists, fingers, hip, knee, ankle or foot. If the person had had symptoms in at least one of the places mentioned, it was considered that he or she had had musculoskeletal pain recently. Multiple pain is indicated by adding up the number of painful areas. Multiple pain means pain that occurs simultaneously in several body areas (for instance, in addition to the lower back and the neck, pain is also felt somewhere in the arms and legs).

The Work and Health interview study explored pain symptoms (long-term or recurring) within the past month in the wrists or fingers, in the neck and shoulder region, in the arms, in the lumbosacral area, in the hips or in the legs.

What is depression?

Depression – when it occurs as a temporary mood change – is a natural reaction to various experiences of disappointment, loss or unattainability. Prolonged depressive mood may be a symptom of a disorder, where a person's functioning, work ability and quality of life are decreased significantly. In addition to depressed mood (low spirits dominating), the other core symptoms of a depressive disorder are loss of interest or pleasure and exceptional fatigue. Other symptoms include concentration difficulties, sleep disorders, changes in appetite and weight, reduced self-confidence or self-esteem, self-accusations or self-destructive thoughts or behaviour (Tuisku & Rossi 2010).

Measurement of depressive symptoms in this study

In order to measure the occurrence of pain and depressive symptoms as simultaneously as possible, the indicator of depressive symptoms that had been used in the Health 2000 study was selected for this report as well, i.e. the standardised 21-question Beck Depression Inventory (Beck et al. 1961) modified according to Raitasalo (Raitasalo 1977). The indicator describes current depressive symptoms on a scale of five grades. Using the total number of points received on the questionnaire, depressive symptoms were classified as follows: no symptoms (0–9 points), mild symptoms (10–18 points), moderate/severe symptoms (over 18 points). For the purpose of analysis, the groups "mild" and "moderate/severe" were combined to form the category "depressive symptoms". In the Work and Health interview study, the interviewees were asked whether they had experienced prolonged or recurring depressive mood or low spirits during the past month (yes/no).

Results:

Co-occurence of musculoskeletal pain and depressive symptoms among Finns 30–99 years of age

In all, 23% of all Finns 30 years of age or older suffered from simultaneous pain and depressive symptoms. Major differences were discovered between the genders and age groups. The share of women with depressive symptoms who also had pain was greater than that of men (27% and 17%, respectively). In both genders, the co-occurence of pain and depressive symptoms increased steadily with age. Among people over 70 years of age, one in every three men and nearly every second woman reported both pain and depressive symptoms (Figures 4a and 4b).

The principal activity correlated clearly with the coexistence of pain and depressive symptoms (Figure 5). People with full-time work had the lowest percentage of simultaneous pain and depressive symptoms (14%), whereas the percentage for unemployed people was higher than average (29%).

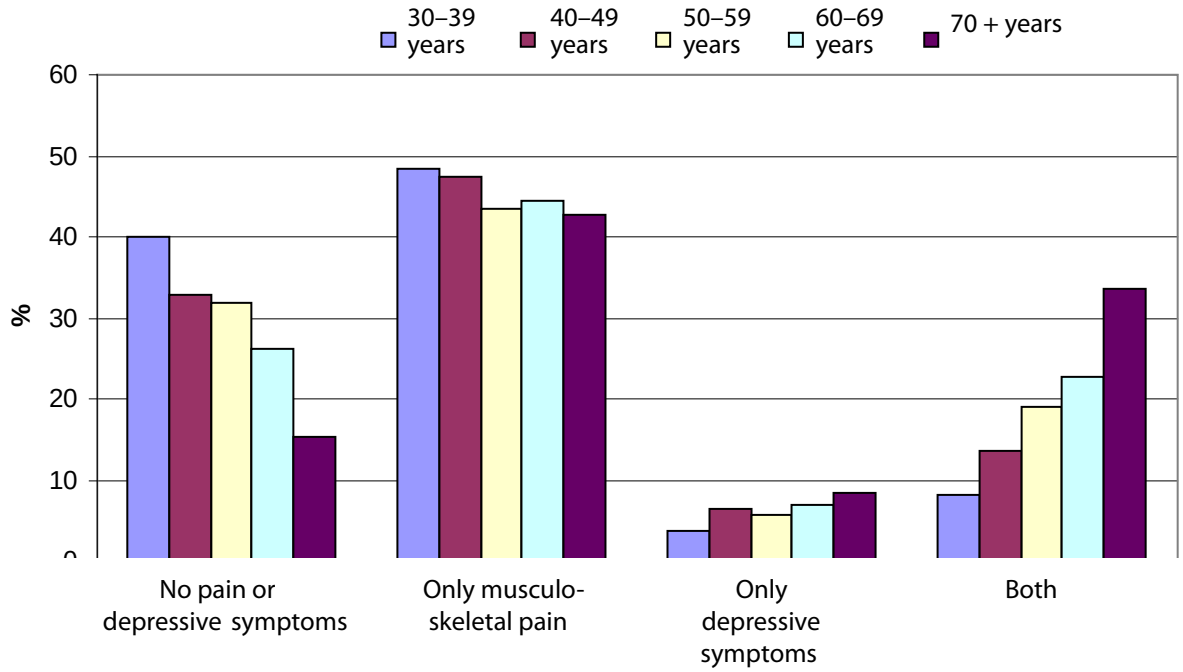


Figure 4a. Men (n = 2 774)

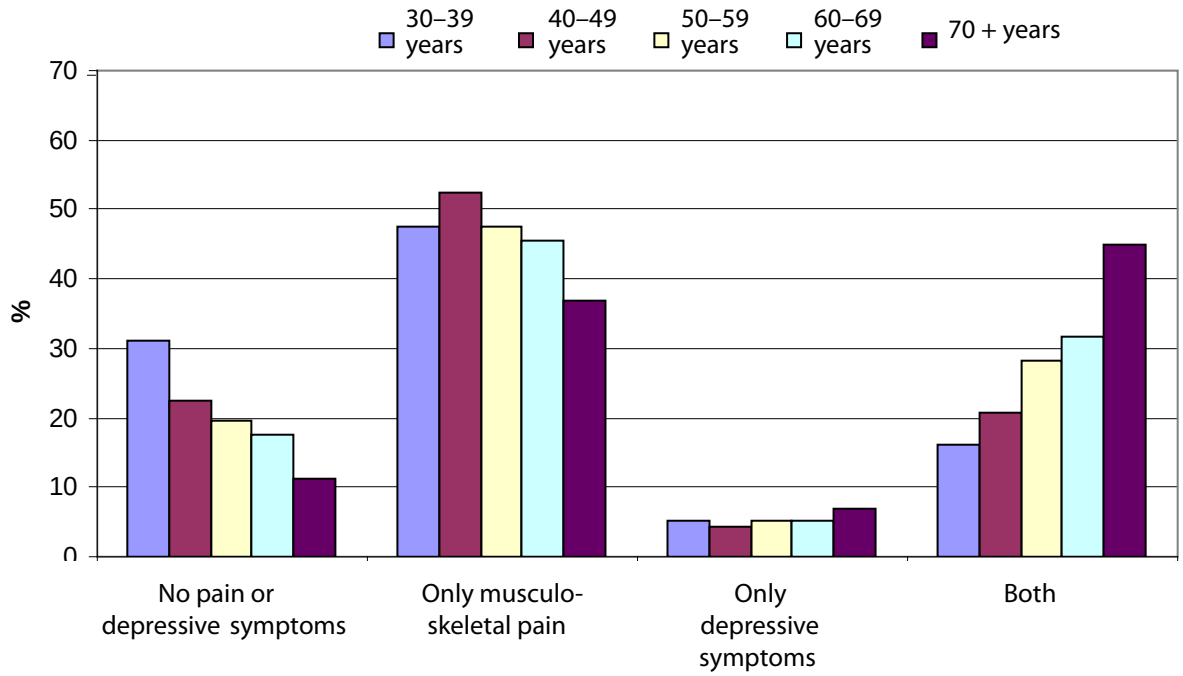


Figure 4b. Women (n = 3 370)

Figures 4a and 4b. Prevalence of recent musculoskeletal pain and depressive symptoms (%) by age group (Health 2000 interview).

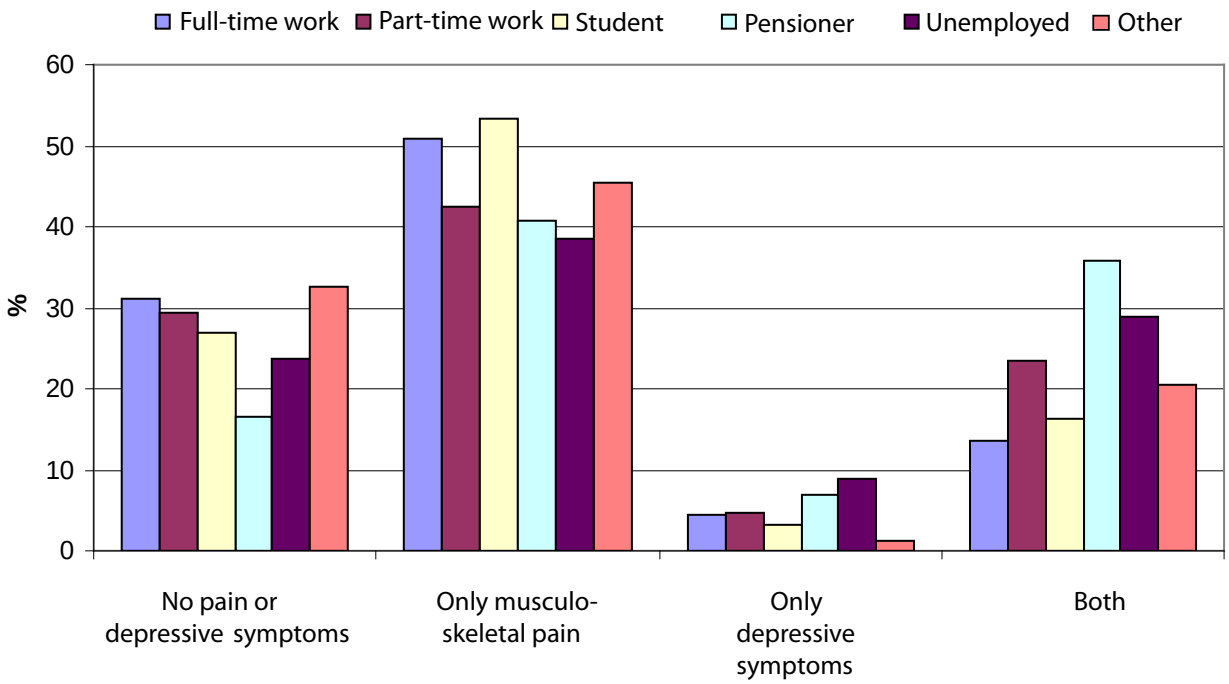


Figure 5. Prevalence of recent musculoskeletal pain and depressive symptoms (%) by principal activity (Health 2000 interview, n = 6 236).

Co-occurence of musculoskeletal pain and depressive symptoms among working Finns 30–64 years of age

Among working Finns, 10% of men and 19% of women had recently experienced musculoskeletal pain and depressive symptoms simultaneously. Mere pain symptoms or mere depressive symptoms did not increase with age in the same way as their co-occurence, which rose clearly among men and even doubled (Figure 6).

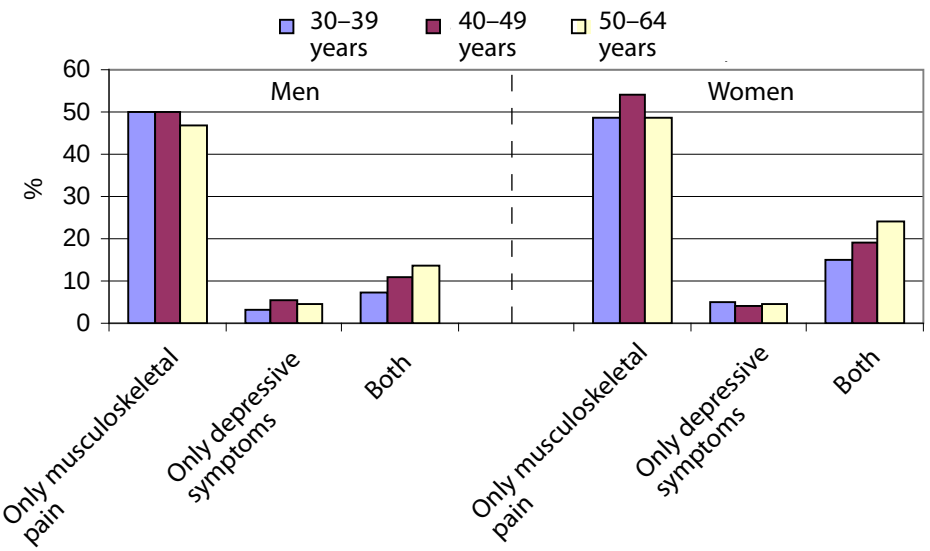
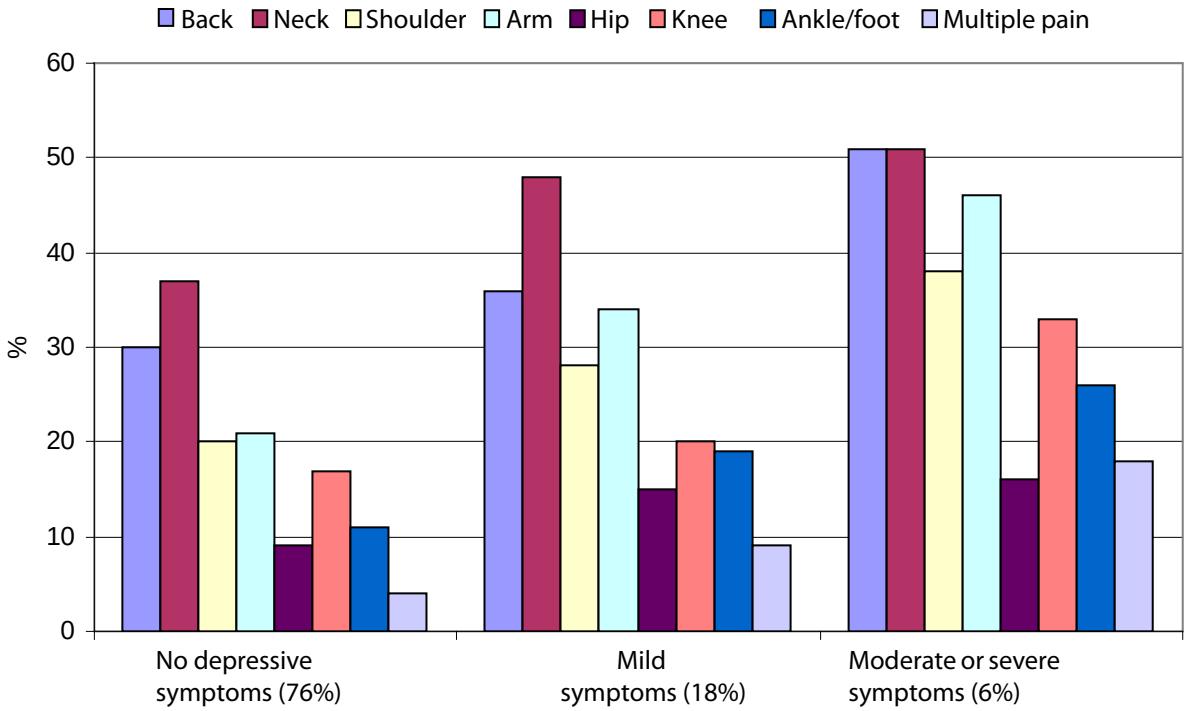


Figure 6. Prevalence of recent musculoskeletal pain and depressive symptoms (%) by gender and age among working people (Health 2000 interview, n = 3 775).

Musculoskeletal pain is very common among working Finns: on average two out of three had experienced pain during the past month. However, the frequency of pain increased even more with depressive symptoms: while 67% of women with no depressive symptoms reported recent musculoskeletal pain, the share among women with depressive symptoms was 81%. For men, the corresponding percentages were 57% and 71%.

Back pain was the most common musculoskeletal pain among men. Its prevalence also rose sharply depending on the level of depressive symptoms: among men with no depressive symptoms, one in four had had back pain; among men with mild depressive symptoms, the ratio was one in three, and among men with moderate or severe depressive symptoms almost every second. For women, neck pain was the most common musculoskeletal complaint, but pain in the ankles and feet and in the shoulders and arms correlated the most with the level of depressive symptoms (Figures 7a and 7b).



Figur 7a. Men (n=1 840)

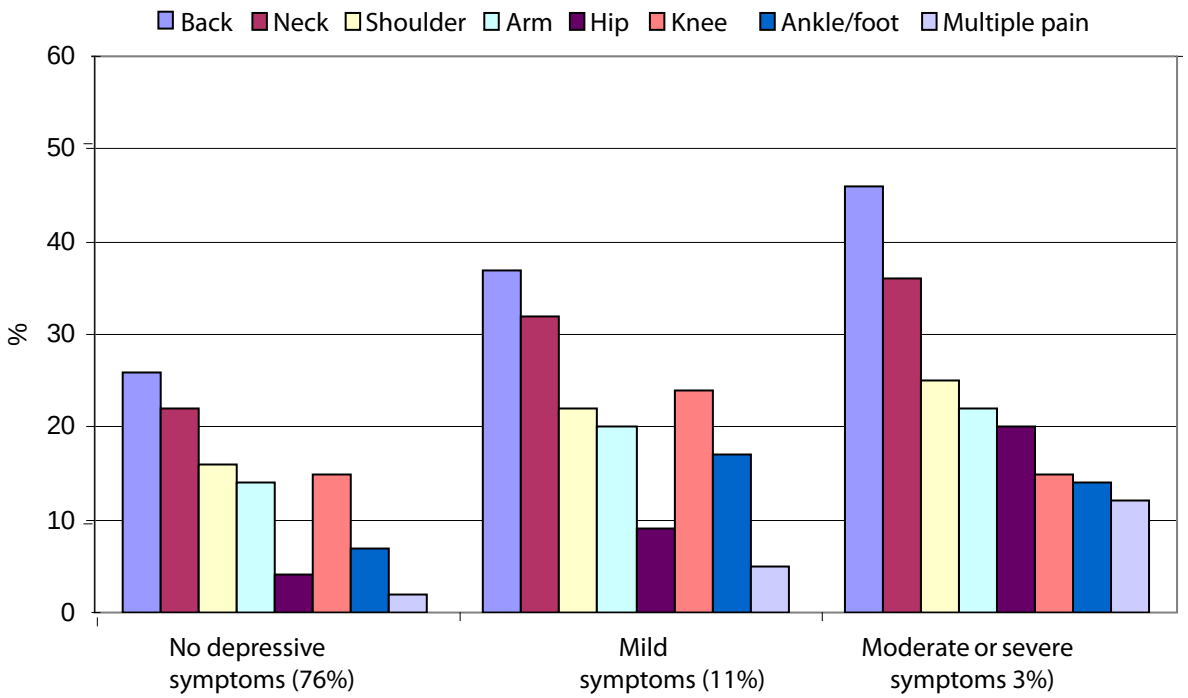


Figure 7b. Women (n = 1 940)

Figures 7a and 7b. Prevalence of recent musculoskeletal pain (%) stratified by the level of depressive symptoms among working people (Health 2000 interview).

The number of painful areas had a strong link with depressive symptoms for both men and women (Figure 8). The more areas of musculoskeletal pain a person had had during the past month, the more likely the person had also depressive symptoms.

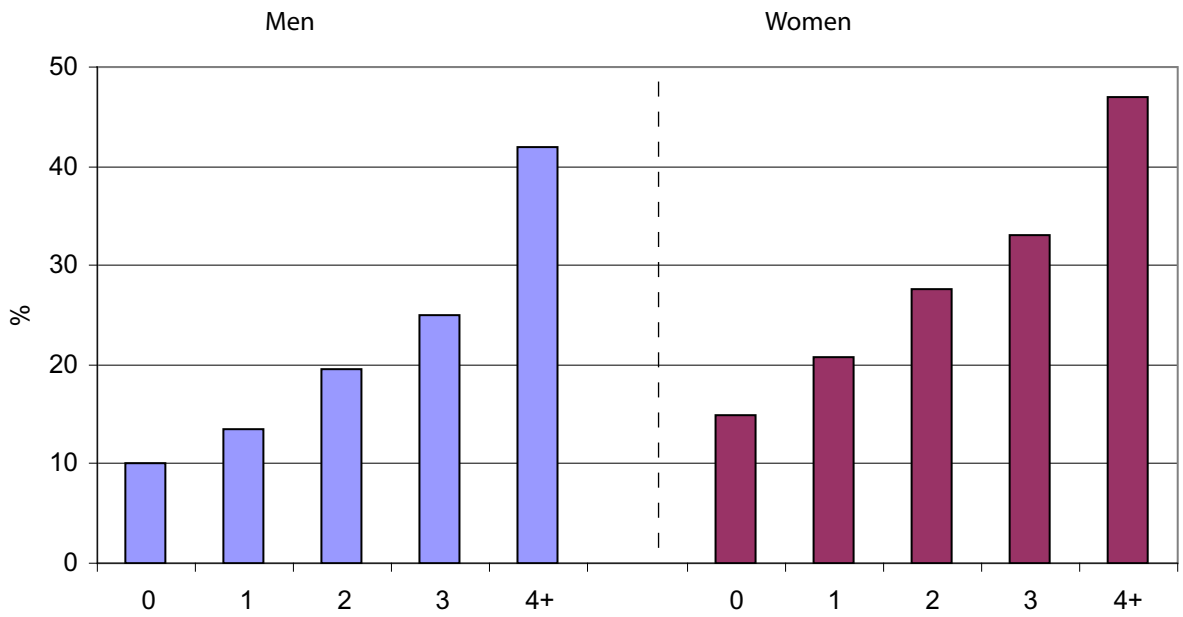


Figure 8. Prevalence of depressive symptoms (%) broken down by the number of painful areas among working people (Health 2000 interview, n = 3 763).

The co-occurence of musculoskeletal pain and depressive symptoms were more common among people with less education. It was particularly common among women who had little education: while 26% of women who had at most nine years of education suffered from both pain and depressive symptoms, the percentage among women with over 12 years of education was 17%. Among men, the corresponding percentages were 13% and 9%.

Co-occurence – changes with time?

No clear changes can be observed in the co-occurence of musculoskeletal pain and depressive mood for the entire working population between the years 1997 and 2009 (Figure 9) or when the results are broken down by gender, age group or education.

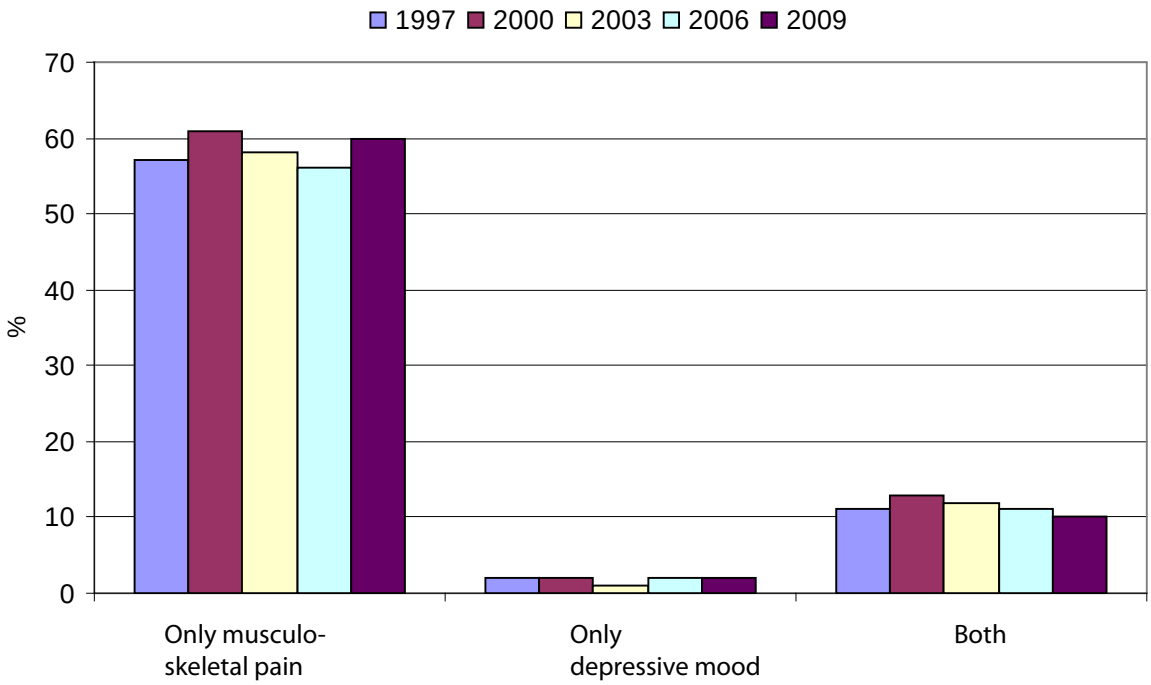


Figure 9. Prevalence of recent musculoskeletal pain and depressive mood (%) among working people between the years 1997 and 2009 (Work and Health interview, n = 11 054).

How are musculoskeletal pain and depressive symptoms linked with the experienced work ability?

Among the working Finns who had both musculoskeletal pain and depressive symptoms, 34% assessed that their work ability had declined (rated at most 7 on a scale of 0 to 10). The corresponding percentage among those who had no pain or depressive symptoms was 5%.

Men experienced a reduction in work ability more often than women, irrespective of whether there was pain or depressive symptoms. With age, the share of people who experienced a reduced work ability increased among both genders.

The differences related to gender and age could also be detected among people who had no musculoskeletal pain or depressive symptoms , but the differences were pronounced when musculoskeletal pain and depressive symptoms occurred simultaneously (Figures 10a and b). Among men 45 years of age or older who had both musculoskeletal pain and depressive symptoms, 55% considered that their work ability had declined, while the corresponding percentage among women was 33%.

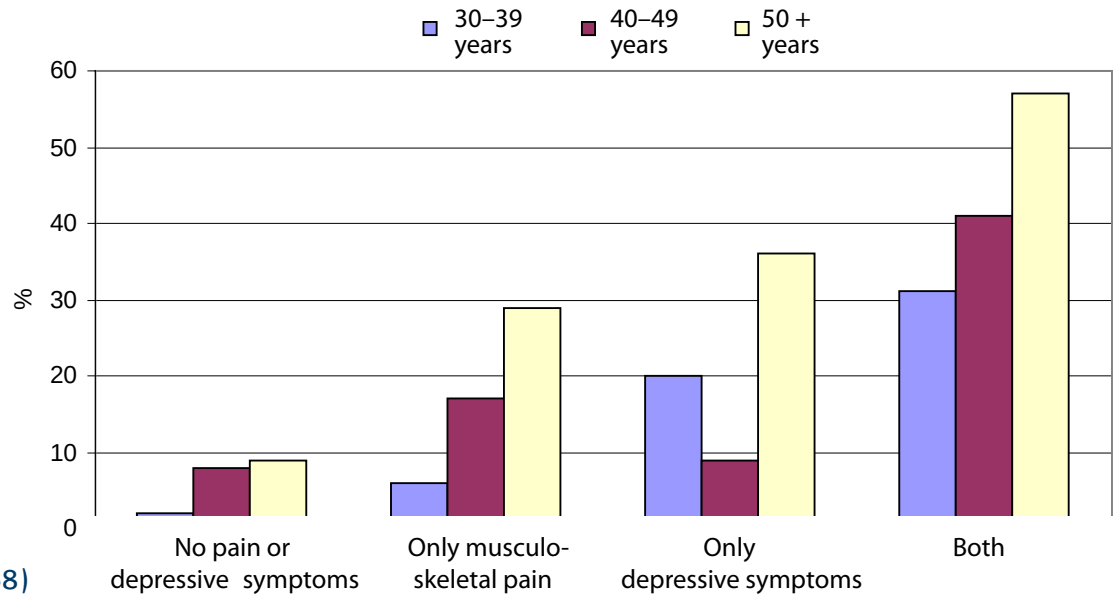


Figure 10a.
Men (n = 2 558)

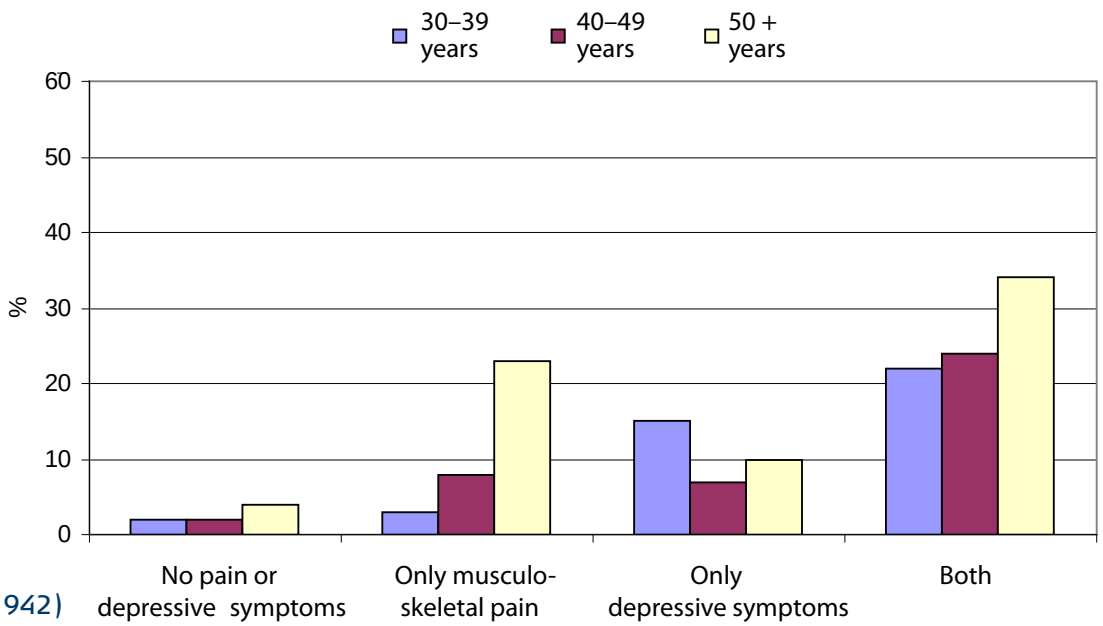


Figure 10b.
Women (n = 2 942)

Figures 10a and b. Percentage of respondents who felt that their work ability had declined, stratified by pain and depressive symptoms and age group (Health 2000 interview).

Seeking treatment for musculoskeletal pain and depressive mood among working people

We examined self-reported consultations with a doctor between the years 1997 and 2009 in five population materials (Work and Health interview surveys). During this period, working people had an average of 1.7 consultations with a doctor within the past six months. People who suffered from musculoskeletal pain and depressive mood had an average of 2.9 consultations.

Consultations with a doctor increased among both working women and men between the years 1997 and 2009 (Figures 11a and b). Whereas 58% had consulted a doctor within the past six months in 1997, the corresponding figure in 2009 was 68%. Among people with musculoskeletal pain and depressive mood, the figures were 74% and 87%, respectively. Compared against those who had no pain or depressive mood, people suffering from them simultaneously consulted a doctor on average nearly three times more often within six months. During the period under review, their consultations with a doctor rose from 2.6 to 3.6.

Consultations with a doctor increased for both genders, but among women more often than men throughout the entire period under review. No differences between age groups were detected in the numbers of doctors' consultations among people who suffered from musculoskeletal pain and depressive mood simultaneously. In 2009, nearly nine out of ten working Finns who experienced pain and depressive mood – both younger and older – had consulted a doctor at least once during the past six months.

Disability caused by musculoskeletal pain and depressive symptoms among working people

We investigated the numbers of sick leaves among Finns 30 to 50 years of age who had participated in the Health 2000 study (sick leaves of at least ten days for which Kela paid sickness allowance) in the years 2002–2008, as well as the part-time or full-time disability pensions granted in the years 2000–2009.

Among the subjects who had suffered from both musculoskeletal pain and depressive symptoms when participating in the Health 2000 study (2000–2001), 58% had had at least one sick leave compensated by Kela between the years 2002 and 2008. The corresponding percentage in the whole material was on average 44%. They also had clearly more sick days (on average 67) when compared with all people between 30 and 50 years of age (37 days). For men, depressive symptoms both alone and together with musculoskeletal pain preceded a sick leave more often than for women (Figure 12).

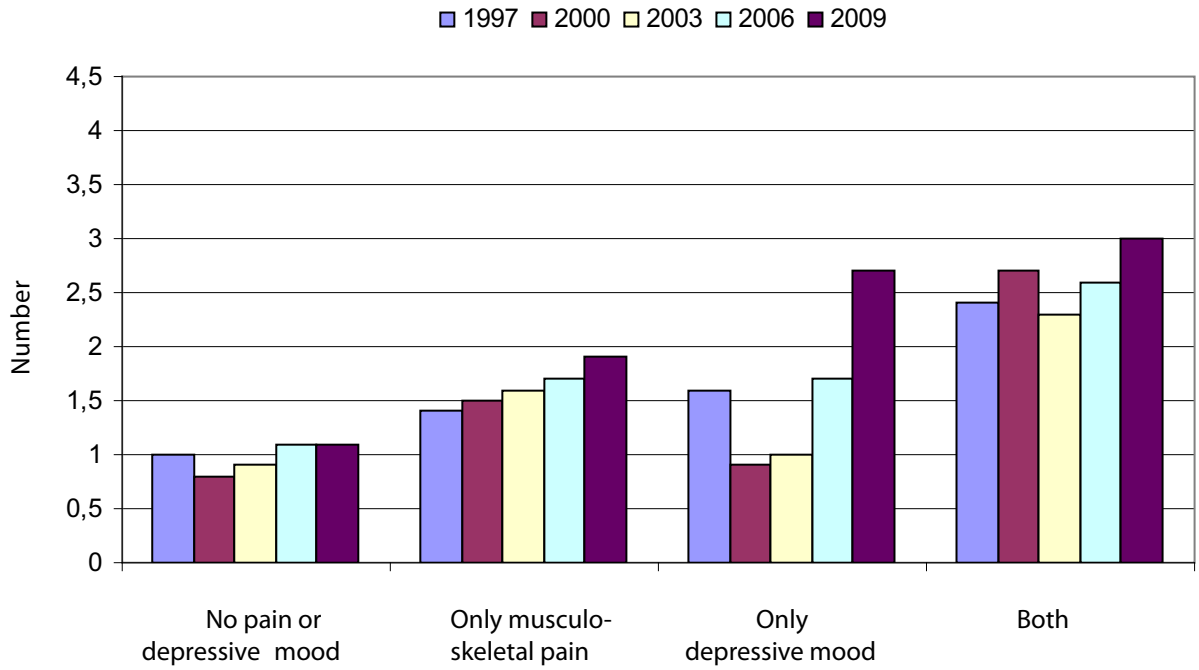


Figure 11a. Men (n = 5 557)

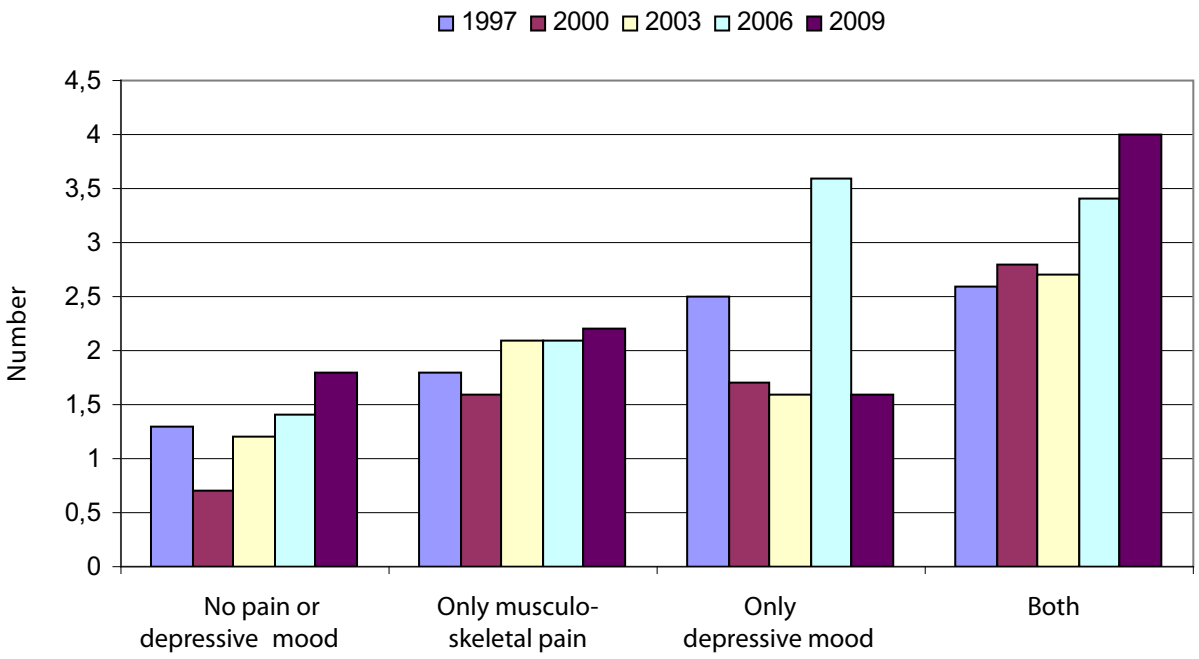


Figure 11b. Women (n = 5 510)

Figures 11a and b. Average number of consultations with a doctor during the past six months among working people in 1997–2009 (Work and Health interviews).

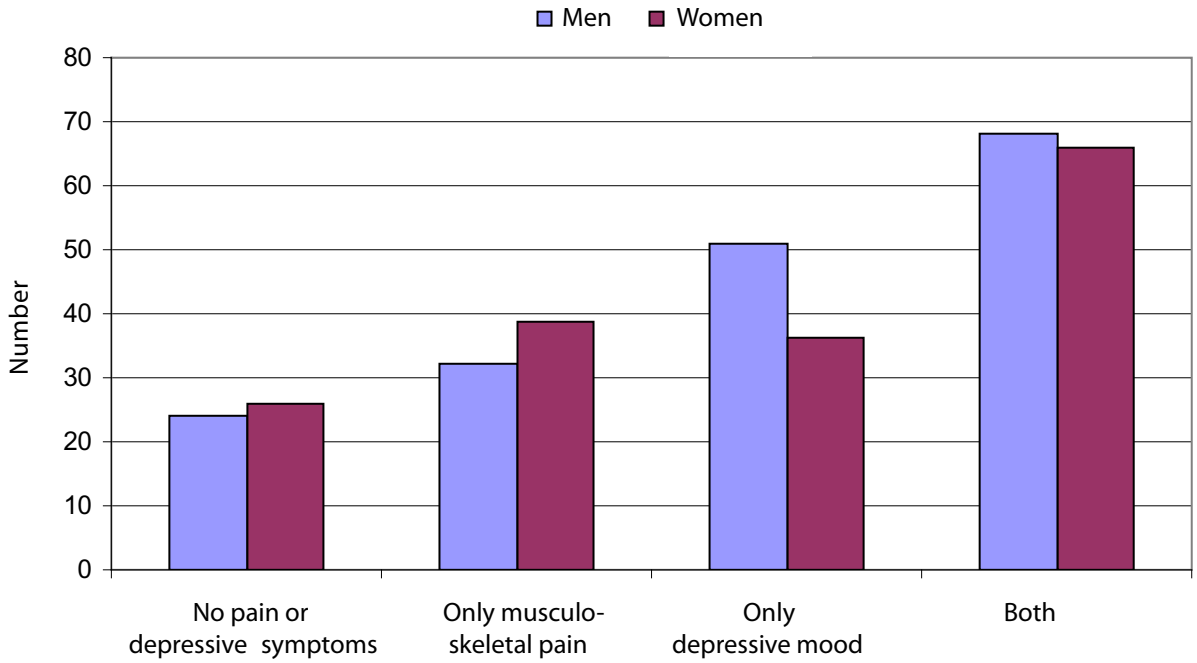


Figure 12. Number of sick days compensated by Kela on average between 2002 and 2008, stratified by musculoskeletal pain and depression (Health 2000 material, n = 2 810).

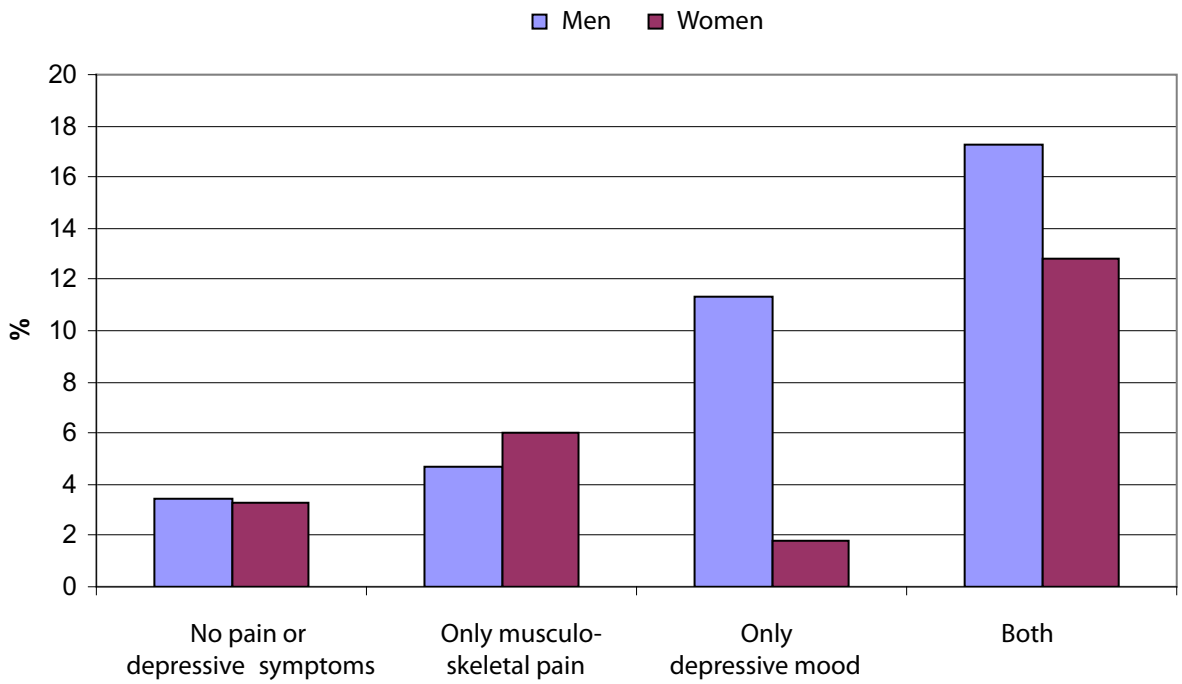


Figure 13. Percentage of workers retired on a disability pension in 2000–2009, stratified by musculoskeletal pain and depressive symptoms (Health 2000 material, n = 2 741).

Among all working people 30 to 50 years of age who had participated in the Health 2000 study, 6% were granted a disability pension within nine years. The corresponding percentages among men and women who had suffered from both musculoskeletal pain and depressive symptoms were 17% and 13%, respectively (Figure 13). In disability pensions, a mutually reinforcing joint effect (1 + 1 > 2) was detected between pain and depressive symptoms.

Conclusions

This report describes the simultaneous occurrence of musculoskeletal pain and depressive symptoms in Finland's adult population. In addition, the report examines how pain and depression together affect people's seeking treatment and their work ability.

Our survey corroborates the results of recent international studies, according to which pain and depression are partly overlapping phenomena: depression accompanied by pain is many times more common than depression without pain symptoms. About one in four Finnish adults suffers from musculoskeletal pain that is accompanied by depressive symptoms. For working people, the ratio is about one in seven. Roughly 5% of the adult population suffers from depressive symptoms alone, whereas nearly half of the population has recently experienced pain without mood problems.

One in three adults suffering from pain also experiences depressive symptoms.

Co-occurence seems to increase steeply with age. Among women 70 years of age or older, pain associated with depressive symptoms is even more common than pain without depressive symptoms. It is interesting that the prevalence of depressive symptoms alone rises only slightly with age and only when examining the whole population. No age trend was discovered in the prevalence of pain alone. A Finnish study has shown that daily or constant pain increases steeply in the population with age (Mäntyselkä 2003). Chronic pain may contribute to the occurrence of simultaneous depression.

When examining and treating musculoskeletal pain among the aging population, the high probability of simultaneous depression should be taken into account.

When focusing only on the active working population, it can be estimated on the basis of this report that about 300,000 workers 30 years of age or older on the Finnish labour market suffer from pain and depression simultaneously. On the basis of the material available, we are not able to discriminate the temporal cause and effect relationship of pain and depression in greater detail.

In fact, the goal of this report is merely to describe the partial overlapping of these two common health problems and the importance of this coexistence to public health. Its consequences affect many aspects important to society, such as sick leaves, premature retirement and the use of health services.

Hundreds of thousands of workers in Finnish working life suffer from simultaneous pain and depressive symptoms. This is a major public health issue.

People suffering from simultaneous pain and depressive symptoms use health care services more than people on average: they consult a doctor three times more often than people who have neither pain nor depressive symptoms.

We have no estimate of how many of the increased doctor's consultations among the adult population, as described in our report, concerned mental health services, in particular. In the extensive population study of over 20,000 people, conducted by the WHO, simultaneous pain and depression correlated with less active and more delayed seeking of mental health services (Demyttenaere et al. 2006). Several studies have shown that very often, depressed patients seek a doctor's help only for their physical problems (Bair et al. 2003); it has been estimated that as many as three out of four depressed persons consult a doctor solely because of physical symptoms, often pain. Thus, the pain symptom may hide the underlying depression, which may remain undiagnosed and untreated. Treatment of pain in itself is ineffective if an important part of the pain – emotions – is disregarded.

Research has shown that those who suffer from simultaneous pain and depression are less satisfied with health care services and with the treatment they receive (Aguera 2010). Dissatisfaction may increase the number of consultations with various doctors. If the depression coexisting with pain is not recognised, both pain and depression symptoms are prolonged, the start of efficient treatment is delayed, and the risks of chronic symptoms, disability and exclusion from working life increase (e.g. Bair 2003; Miranda 2010; Linton 2011). Screening for depression is recommended already during the first consultations for musculoskeletal pain in primary health care.

Depression can be recognised fairly reliably with two questions (www.toimia.fi):

- **During the past month, have you often been bothered by feeling down, depressed, or hopeless?**
- **During the past month, have you often been bothered by little interest or pleasure in doing things?**

This report, too, highlights the risk of exclusion from working life related to pain and depression. Pain symptoms and depression together were two times more common among unemployed Finns than among people with full-time employment. The temporal link between unemployment, pain symptoms and depression, i.e. to what extent pain and depression symptoms increase the risk of unemployment and, conversely, how prolonged or repeated unemployment in itself increases these symptoms, has not been studied much (Heponiemi 2008). Improving health care services for unemployed people provides better opportunities for more efficient identification and treatment of pain and mood disorders.

Among working people, those who had both pain and depressive symptoms reported considerably more often that their work ability had declined, they had more absences from work because of illness, and they had a higher probability of being permanently excluded from working life than the population on average.

When occurring simultaneously, pain and depressive symptoms prolong sickness absence and increase the risk of premature retirement.

Women are known to report pain and depression more often than men. Co-prevalence of pain and depression is also more common among women (Aguera et al. 2010; Ohayon & Schatzberg 2003), as is shown in this report, too. Our result is congruent with previous studies. It is also more common for women to seek treatment. The fact that women have a lower threshold for reporting pain, identifying the symptoms of depression and seeking help for them explains some of the difference between the genders. In addition, some experimental studies utilising brain imaging techniques have shown that women have a lower pain threshold than men (Wiesenfeld-Hallin 2005). Differences between the genders have also been discovered in the control of negative emotions (McRae 2008). These differences have been explained by biological factors associated, for instance, with sex hormones and metabolic hormones.

An interesting finding in our report is the difference in work ability between men and women. Men suffering from pain and depressive symptoms felt that their work ability was reduced clearly more often than women did. Since this result is based on a cross-sectional study where the temporal links between pain, depression and reduced work ability cannot be determined, it is possible that the reduction in work ability caused by musculoskeletal symptoms depresses men more than women. Thus, depression would be the effect of reduced work ability resulting from pain.

However, our follow-up data on sick leaves and disability pensions, collected from registers, support the alternative interpretation that the coexistence of pain and depression increases the risk of disability more than these problems do alone, and that pain and depressive symptoms together have a stronger negative impact on continued working for men than for women. It is also possible that the fact that women identify the symptoms better and seek treatment sooner protects them against permanent disability. This is an interesting question for future follow-up studies.

The indicators that we used for pain, depressive symptoms (Beck Depression Inventory) and experienced work ability are all validated, generally used ways of measuring these phenomena in population studies. The use of the Beck Depression Inventory for screening depression among pain patients has sometimes been criticised, because it has been thought that pain symptoms themselves lead to false positive (or negative) depression diagnoses (Estlander 1999).

Use of depression questionnaires in a population study is nevertheless justified. The extensive population study by WHO, for instance, concluded that there was no difference in the features of depression (measured using CIDI interviews) whether people had or did not have simultaneous pain (Demyttenaere et al. 2006). Similar results have also been obtained in other studies (Ohayon & Schatzberg 2003). Nor did the more detailed analyses that we conducted for this report show that the various symptoms of depression would have differed significantly depending on whether the person had only depression or depression and pain simultaneously. This means it is unlikely that the simultaneous occurrence of pain and depression could be explained merely by depression symptoms associated with pain, such as fatigue and insomnia.

When measured with indicators reported by the subjects themselves and indicators based on registers, our results on the consequences of pain and depressive symptoms for work ability supported each other, thereby reinforcing the reliability of our results. In particular, our results support the hypothesis that musculoskeletal pain and depressive symptoms often occur together in the Finnish population and that this has significant consequences.

Final remarks

The goal of this report was to describe the simultaneous occurrence of two common health problems in the population: pain symptoms in the musculoskeletal system and depressive symptoms. We also want to make readers aware of the importance of this phenomenon with respect to the individual's work ability and use of health services. Our hope is that the findings in this report encourage Finnish health care not only to provide good care for physical disorders but also to intensify the earlier identification and treatment of mental health problems.

In view of extending work careers, the major impact of ageing on the coexistence of pains and depressive mood should be taken into account in occupational and primary health care and in rehabilitative activities. Especially men's work ability is threatened by simultaneous pain and depressive symptoms. Men's ability to identify their symptoms and their willingness to seek treatment on time should be supported better. For working people, this could be achieved by means of health examinations and screening questionnaires organized by occupational health care, whereas unemployed people could be offered, for instance, regular health examinations. By providing training for supervisors and co-workers, it is possible to increase the work organisation's preparedness to encounter a worker with multiple symptoms and to offer support for maintaining the person's work ability. Each worker also has an important and responsible role in maintaining his or her own health and work ability.

A human being is a whole where the mind and body cannot be separated from each other. The factor triggering a pain experience can be physical, mental or social. Depression may cause somatic symptoms. All health problems have their physical, psychological and social dimensions. A holistic approach to people and their symptoms promotes the recognition of these dimensions.

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Appendix 1. Material used

Health 2000

The national Health 2000 study was carried out in 2000–2001. An extensive network of organisations in the social welfare and health sector participated in the implementation of the study under the National Institute for Health and Welfare (formerly the National Public Health Institute). The main objective of the Health 2000 study was to provide a comprehensive picture of the health and functioning of the Finnish adult population by determining the frequency of and reasons for the principal health problems and the associated need for care, rehabilitation and help. The study population was all Finns 18 years of age or older. A representative sample of 10,000 people was selected from among them. People who were 30 years of age or older underwent a health interview and a health examination, and those who were 18 to 29 years of age underwent a health interview. In addition, information was collected using many questionnaires (Heistaro 2005).

Data on, for instance, sick leaves and pensions obtained from the registers of the Social Insurance Institution and the Finnish Centre for Pensions were subsequently added to the Health 2000 material.

Work and Health interview study

The Work and Health interview study is a computer-aided telephone interview conducted by the Finnish Institute of Occupational Health once every three years. The interview study is used to collect comprehensive follow-up data on the work, working conditions and occupational health of Finland's working population (Work and Health interview study 2009).

The first Work and Health interview study was carried out in 1997. This was followed by studies in 2000, 2003, 2006 and 2009. Between 1997 and 2006, the interviewees were selected by means of random sampling from the population register from among Finnish speakers 25 to 64 years of age. In 2009, the interviewees were selected from among people 20 to 64 years of age who were in the employment statistics of Statistics Finland. This also included Swedish speakers. With regard to its age, gender and regional distribution, the material for the Work and Health interview represents Finnish-language working Finns 25 to 64 years of age. The material for 2009 also represents people of 20 to 64 years of age who are Swedish speakers. The study group has ranged between 2,031 and 3,363 people in the various years. The response rate has ranged from 58 to 72 per cent.

Additional infomation:

http://www.ttl.fi/en/health/control_over_working_conditions/mental_capacity_and_strain/depression/pages/default.aspx